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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,226	12/27/2005	Ludwig Steinhauser	10537-297	2990
26646	7590	08/29/2007		
KENYON & KENYON LLP ONE BROADWAY NEW YORK, NY 10004			EXAMINER LIN, KUANG Y	
			ART UNIT 1725	PAPER NUMBER
			MAIL DATE 08/29/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/540,226

Applicant(s)

STEINHAUSER, LUDWIG

Examiner

Kuang Y. Lin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-21 and 26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 9-21 and 26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9, 11-15, 17-21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art as set forth in pages 1-3 of the specification and further in view of either US 4,321,010 to Wilkinson et al., US 4,589,478 to Wunder, or US 5,600,950 to Ottenschlaeger and further in view of US 5,299,619 to Chandley et al.

The applicant's admitted prior art shows (see, for example, page 2; line 8 through page 3, line 25 of the specification) to manufacture the half-tubes for the heat exchanger through steps of forging and welding. The openings in the surface of the half-tubes are formed by EDM after the half-tubes are manufactured. In short, the admitted prior art substantially shows the claimed invention except that it does not show to manufacture the heat exchange tubes through the conventional investment casting process. However, each of the secondary references shows to form openings in the tube surface *in situ* as the tube is investment cast. It would have been obvious to use the investment casting technique of the secondary references for manufacturing the half-tubes of the admitted prior with the openings formed *in situ* such that to simplify the heat exchanger making process. With respect to the step of applying either a vacuum or under inert gas during casting step, Chandley et al. show to provide an insert

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gas atmosphere during casting step such that to prevent the oxidation of the casting. It would have been obvious to provide the inert gas of Chandley et al. in the casting process of the secondary references in view of the advantage.

3. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over either US 4,321,010 to Wilkinson et al., US 4,589,478 to Wunder, or US 5,600,950 to Ottenschlaeger and further in view of US 5,299,619 to Chandley et al. as applied to claim 9 above, and further in view of US 4,223,716 to Ostrowski.

It would have been obvious to perform the dewax step in an autoclave in view of Ostrowski who shows that feature to be conventional.

4. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over either US 4,321,010 to Wilkinson et al., US 4,589,478 to Wunder, or US 5,600,950 to Ottenschlaeger and further in view of US 5,299,619 to Chandley et al. as applied to claim 9 above, and further in view of US 3,895,672 to King, Jr. et al.

It would have been obvious to preheat shell mold prior to pouring of molten metal to prevent molten metal from premature solidification in view of King, Jr. et al. who show that feature to be conventional.

5. Applicant's arguments filed August 20, 2007 have been fully considered but they are not persuasive.

a. Applicant in page 5 of the response stated that the office action did not identify what portion of the description in pages 1-3 of the specification is being relied upon. Applicant is advised that pages 1-3 of the specification discloses how the prior art heat exchange tubes were made. For example, page 2, line 8

through page 3, line 25 of the specification shows the steps of manufacturing the half-tubes for heat exchanger through forging and welding steps. The openings in the surface of the half-tubes are formed by EDM after the half-tubes are manufactured.

b. Applicant in page 6 of the response stated that Wilkinson et al. patent relates to a blade or vane structure for the gas turbine and does not show the process for producing the heat exchange tube. However, the Wilkinson does shows to form openings in an article *insitu* through investment casting process. It would have been obvious to adapt the investment casting process of Wilkinson in fabricating the conventional heat exchange tube such that to form the openings *insitu* and thereby to simplify the heat exchange tube making process.

c. Applicant in page 6 of the response stated that Wunder and Sttenschlaeger, respectively, merely mentions the shell body or lost wax (precision) casting and does not mention the manufacture of shell body or lost wax (precision) casting process. However, the manufacturing steps of shell body or lost wax process is a well known process in the foundry art (see, for example, col. 5 of Wilkinson et al.)

d. The patents to Ostrowski, Chandley et al. and King, Jr. et al. are cited in view of applicant's requested for references (see page 7 of applicant's response) which respectively shows the use of autoclave to melt out the wax, provides inert gas for preventing oxidation of molten metal during casting, and preheats the casting mold for preventing premature solidification of molten metal.

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6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuang Y. Lin whose telephone number is 571-272-1179. The examiner can normally be reached on Monday-Friday, 10:00-6:30,.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jonathan J. Johnson can be reached on 571-272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kuang Y. Lin/
Primary Examiner
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8-27-07